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THE
ONTARIO WATER RESOURCES
COMMISSION
WATER POLLUTION SURVEY
of the
VILLAGE OF PICKERING
COUNTY OF ONTARIO

1966

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1966
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Report on a water pollution
survey of the village of Pickering
in the county of Ontario.

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THE
ONTARIO WATER RESOURCES COMMISSION

Report on a
WATER POLLUTION SURVEY

of the
VILLAGE OF PICKERING

in the
COUNTY OF ONTARIO

DIVISION OF SANITARY ENGINEERING

1966

WATER POLLUTION SURVEY

of the

VILLAGE OF PICKERING

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INTERPRETATION OF ANALYSES

LABORATORY RESULTS

MAP OF THE VILLAGE OF PICKERING

REPORT ON A
WATER POLLUTION SURVEY
OF THE
VILLAGE OF PICKERING

INTRODUCTION

On October 25, 1965 a water pollution survey was performed in the Village of Pickering. Surveys of this nature are conducted by the Ontario Water Resources Commission for the purpose of locating and recording sources of existing and potential water pollution.

Similar surveys were made in this municipality in 1957 and 1962. Subsequent reports revealed various sources of pollution and recommendations for remedial action were presented.

Samples collected during this survey were submitted to the Ontario Water Resources Commission Laboratory for analyses. The pertinent sample results from this and previous surveys are included in the appendices of this report, as is a map of the village showing sampling point locations.

Discussions were held with the following officials during this survey :-

Mr. B.A. Hogarth, Clerk-Treasurer, Village of Pickering;
Mr. J.E Hoyt, Public Health Inspector, Ontario County
Health Unit.

VILLAGE OF PICKERING

General

The Village of Pickering is located in the County of Ontario, 22 miles east of the City of Toronto. According to the Municipal Directory, the village had a population of 1,860 in 1964 and covered an area of 478 acres. Pickering became an incorporated village in 1953 and is essentially a residential area.

Drainage

Surface runoff from the municipality is, for the most part, directed to Duffin Creek. This watercourse flows in a southerly direction past the west side of the developed portion of the village. A system of municipal storm sewers and ditches conducts storm flows and, in some instances, domestic waste flows to Duffin Creek.

Water Supply

A water system consisting of a distribution system and booster pumping station is utilized and all water is supplied from the Town of Ajax municipal water works. The delivered pressure from Ajax is adequate for normal use in Pickering. The pumping station is only used during periods of high demand such as fire.

Sewage Disposal

Sewage disposal is affected on a private basis. Subsurface disposal systems have been installed under the supervision of the Ontario County Health Unit staff since its organization in 1957.

Many disposal systems, installed prior to this time, however, discharge untreated or inadequately treated wastes to the municipal storm sewers.

In 1958, the Village of Pickering initiated a municipal sewage works programme and a preliminary engineering report was prepared by the firm of Gore and Storrie Limited, Consulting Engineers. Preliminary approval of this report and of several subsequent revisions to the original scheme were adopted by this Commission. Unfortunately, the village has not been successful in securing Ontario Municipal Board approval for the expenditures necessary to proceed with a sewage works project. Subsequently, in September, 1965, a resolution of the municipal council and appropriate application for the construction of a sewage treatment plant and connecting facilities as a provincially-owned project was forwarded to the Ontario Water Resources Commission.

Industry

The principle industries located in the Village of Pickering include the Primeau Argo Block Company Limited (formerly Cooper Block Limited) which manufactures building-blocks and the Mitchell Building Supplies, distributors of building supplies.

No industrial waste effluent is produced by the above firms.

Refuse Disposal

Refuse is removed regularly by a privately-contracted firm which utilizes the Township of Pickering municipal dump. No problems were reported concerning adverse affects which this site may have on water quality.

INTERPRETATION AND SIGNIFICANCE OF LABORATORY RESULTS

The analyses employed in this survey to assess the quality of surface waters and outfall discharges were biochemical oxygen demand (BOD), suspended solids, and total coliform count. An interpretation of the various analyses employed is included in the appendices of this report.

The OWRC objectives for surface water quality are that the following concentrations are not exceeded:

BOD - 4.0 ppm

Coliform count - 2400 coliforms per 100 ml.

Adequate protection of surface waters, except in certain specific instances influenced by local conditions, is generally obtained if the following waste discharge concentrations are not exceeded:

BOD - 15 ppm

Suspended Solids - 15 ppm

SAMPLE RESULTS

There have been no major changes to the municipal storm

sewer system or to discharges thereto since the previous water pollution survey. Unusual increases or decreases in the bacteriological coliform, BOD and suspended solids concentrations during this survey may, in part, be attributed to surface run-off as a result of light rains on four consecutive days prior to the survey.

Laboratory analyses indicate an increase in coliform concentrations downstream from Pickering in Duffin Creek. While the stream bacteriological counts were satisfactory, the downstream count approached the objective of 2400 coliforms per 100 ml.

As on previous surveys, relatively excessive coliform concentrations occurred in the storm sewer discharges from an outfall at the rear of the Post Office and from two outfalls on the east side of Duffin Creek on the north side of Highway No.2. Relatively high coliform counts are also noted in the discharge from a storm sewer outfall on the south side of St. George's Street and from the ditch on the east side of Church Street. High coliform concentrations indicate the presence of sanitary wastes. It is suspected that the unsatisfactory chemical quality of the discharge from a storm sewer outfall opposite Cameron Street may be attributed to construction at the Pickering District High School.

It is evident that the increased coliform concentrations in Duffin Creek downstream from the above mentioned storm sewer outfalls

is a result of the presence of sanitary wastes in the sewer discharges.

SUMMARY AND CONCLUSIONS

The water pollution survey performed in the Village of Pickering on October 25, 1965, revealed that inadequately treated sanitary wastes continue to gain access to Duffin Creek via the municipal storm drainage system. The need for a municipal sewage works to eliminate the unsatisfactory disposal procedures in the village is obvious. Attempts to secure Ontario Municipal Board approval for expenditures for such a sewage works have been unsuccessful. The municipality has recently made a request for the provision of a sewage works as a provincially-owned project.

All of which is respectfully submitted.

Approved by:



L. G. South
Acting District Engineer
Division of Sanitary Engineering

Prepared by: W.C. Stevens

/jp

INTERPRETATION OF ANALYSES

The analyses employed in this investigation to assess the quality of the surface water and outfall discharges are as follows:

Biochemical Oxygen Demand (BOD)

The BOD of sewage and polluted waters is the oxygen required during stabilization of the decomposable organic material by aerobic biochemical action. A 5-day determination with incubation at 20°C is reported. A high BOD is indicative of organic or chemical pollution.

Solids

The analyses for solids include tests for total, suspended and dissolved solids. The results are reported in parts per million.

The suspended solids indicate the measure of undissolved solids of organic or inorganic nature in suspension. Land erosion and sewage are significant sources of suspended solids. The effect of suspended solids in water is reflected in difficulties associated with water purification and deposition in streams which could interfere with the habitat of aquatic life. Minimal suspended solids concentrations may create laboratory difficulties and usually results in these values being determined as turbidity reported in turbidity units.

The dissolved solids are a measure of those solids in solution.

Membrane Filter Coliform Count

The membrane filter technique is employed to obtain a direct enumeration of coliform organisms and is reported per 100 millilitres of the sample. The presence of coliforms indicates pollution from human or animal excrement, or from some non-faecal sources.

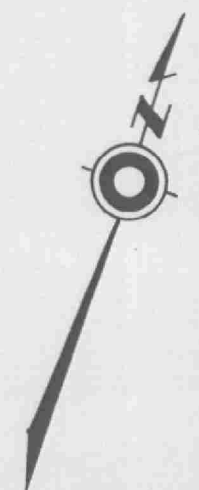
All analyses are reported in
ppm unless otherwise indicated.

VILLAGE OF PICKERING
WATER POLLUTION SURVEY

Sample Point No.	Description	Date	Coliforms per 100 ml.	5-Day BOD	SOLIDS			Turbidity
					Total	Susp.	Diss.	
DF-2.68	Duffin Creek at Highway No.401.	May 1/62	700	1.8	292	-	-	3.1
		Oct.25/65	2,270	1.4	380	13	367	-
DF-2.76D	Ditch to Duffin Creek on east side of Church Street.	Oct.25/65	730,000	4.2	940	22	918	-
DF-2.79D	Ditch to Duffin Creek on west side of Church Street.	June 14/57	15,000	1.3	656	54	602	-
		Nov.26/57	33,000	2.7	1470	1018	452	-
		Dec 18/57	20,000	4.4	1056	24	1032	-
		May. 1/62	21,200	6.2	714	6	708	-
		Oct.25/65	Insufficient flow for sampling.					
DF-3.21D-1-W	Storm sewer at rear of Post Office - discharge to an open ditch leading to Duffin Creek.	June 14/57	240,000	38.0	530	34	496	-
		Nov. 26/57	2,400,000	16.0	700	60	640	-
		Dec. 18/57	130,000	50.0	1750	324	1426	-
		May 1/62	249,000	76.0	806	50	756	-
		Oct. 25/65	2,310,000	7.0	872	13	859	-
DF.3.21D-2-W	Storm Sewer on south side of St. George's Street opposite the Fire Hall discharge to open ditch leading to Duffin Creek.	Oct.25/65	910,000	5.2	856	5	851	-

VILLAGE OF PICKERING
WATER POLLUTION SURVEY (contd.)

<u>Sample Point No.</u>	<u>Description</u>	<u>Date</u>	<u>Coliforms per 100 ml.</u>	<u>5-Day BOD</u>	<u>SOLIDS</u>			<u>Turbidity</u>
					<u>Total</u>	<u>Susp.</u>	<u>Diss.</u>	
DF-3.67W-1	Storm sewer to east bank of Duffin Creek on north side of Highway No. 2.	Dec. 3/57	-	26.0	514	50	464	-
		Dec.18/57	24,000	124.0	2534	1134	1400	-
		Dec.19/57	20,000	5.8	908	532	376	-
		May 1/62	21,000,000	50.0	658	62	596	-
		Oct.25/65	301,000	10.0	820	49	771	-
DF-3.67W-2	Storm sewer to east bank of Duffin Creek - 50 feet north of Highway No.2.	Dec. 3/57	-	2.6	450	40	410	-
		Dec.18/57	790,000	14.0	1160	612	548	-
		May 1/62	2,430,000	-	-	-	-	-
		Oct.25/65	34,500	1.3	654	8	646	-
DF-3.73W	Storm sewer to Duffin Creek - opposite Cameron Street.	Oct.25/65	2,100	20.0	1714	1324	490	-
DF-3.82	Duffin Creek - 1000 ft. north of Highway No.2	May 1/62	30	2.4	272	-	-	6.0
		Oct.25/65	490	3.6	390	21	369	-



T O W N S H I P

O F

P I C K E R I N G

PICKERING DISTRICT
HIGH SCHOOL

VILLAGE

LIMITS

RUNNYMEDE INVESTMENTS
LTD. - TORONTO

DF - 3.82

DF - 3.73
W

DF - 3.67
W-2

DF - 3.67
W-1

MITCHELL
BUILDING
SUPPLIES

PRIMEAU ARGO
BLOCK Co. LTD.

DF - 3.21 - D-2
W

DF - 3.21 - D-1
W

DEPARTMENT

OF

DUFFIN CREEK

HIGHWAYS

DF - 2.79
D

DF - 2.76
D

DF - 2.68

LEGEND

DF - 2.68 - SAMPLING POINT SHOWING STREAM AND MILEAGE

DF - 2.76
D - STREAM AND MILEAGE AT OUTFALL
- TYPE OF OUTFALL

D - DITCH
W - STORM SEWER

ONTARIO WATER RESOURCES COMMISSION

VILLAGE OF PICKERING
WATER POLLUTION SURVEY

1965

SCALE: 400 0 400 800 FEET

DRAWN BY: M.I.H. DATE: JUNE 1966

CHECKED BY: R.W. DRAWING No: 66-38